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Original Article

Evaluation of the recurrence rates and the factors affecting recurrence in pterygium surgery with autograft transplantation

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Abstract

Aim: The objective of this study is to determine the recurrence rates in pterygium surgery with autograft transplantation and to investigate the factors affecting recurrence.

Material and Methods: This study was carried out in our clinics between July 2015 and March 2017, and patients who had undergone pterygium surgery with autograft were examined retrospectively. Forty-six patient were included in the study. Demographic data of the patients, comorbidities, follow-up periods, complications, size of the pterygium, recurrence rate, rate of inflammation persisting in the autograft at week 2 were recorded.

Results: Forty-six patients who had undergone pterygium operations with autografts were included in this study The mean age of the patients was 46.6±15.6 y. Recurrence was seen in 13.3% (6/46) patients during the mean follow-up period of 12.06±4.5 months. The mean period of time elapsed till recurrence was 4.3±1.3 months. The mean pterygium size was 3.9±0.6 mm. Discomfort still continuing at week 2 was seen with a rate of 22.2%. Regarding to the complications; Tenon cyst was seen in 6.7% (3/46), graft edema in %8.9% (4/46) and dellen was seen in 4.4% (2/46). Recurrence rate was 7.4% in females and while it was 22.2% in males, which was higher as compared to females.

Conclusion: Pterygium surgery using conjunctival autograft is a safe and effective technique; and while recurrence can be seen with a low rate, recurrence is affected by factors including age, gender and size of the pterygium.

Keywords: Autograft; conjunctiva; pterygium; recurrence

INTRODUCTION

Pterygium is the fibrovascular subepithelial growth of the bulbar conjunctiva tissue with a triangular shape over the cornea. While it is commonly seen at the nasal side, it can also be found at the temporal side. Although medical treatment can decrease patients's symptoms such as irritation or redness, definitive treatment is surgery

The main indication for pterygium surgery is visual problems related to the triggering of marked astigmatism and cosmetic problems (1-3). However, surgical excision of pterygium is associated with a high rate of recurrence (4). Therefore, many diverse surgical treatment approaches have been developed such as adjuvant mitomycin C application and beta irradiation treatment following bare sclera, or closure of the bare sclera with conjunctival autograft or amniotic membrane (5-6). Mitomycin C is the most commonly used cytotoxic agent to reduce the recurrence rate, and 4% to 22% recurrence rate is reported (7). Although recurrence rate is low, complications including corneal perforation, glaucoma, corneal edema, cataract, scleral ulceration, necrosis and iritis have been reported. Conjunctival autograft transplantation has been indicated as a good techniques with a low rate of recurrence and complications, and it is preferred to amniotic membrane in recurrent and advanced case with the purpose of obtaining healthy conjunctiva (8). The reservoir conjunctival tissue is important to create the upper conjunctival bleb in cases with glaucoma and requiring surgery particularly in the advances ages of life.

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Pterygium excision with conjunctival autograft is the standard treatment performed by suturing the autograft onto the recipient bed (9). Conjunctival autograft is generally harvested from supero-temporal and infero-temporal areas. Our purpose in this study was to investigate the recurrence rates in pterygium surgery with autograft and the factors affecting the recurrence.

MATERIAL and METHODS

Patients who had undergone pterygium surgery with autograft performed by one surgeon in Mardin State Hospital in Turkey between July 2015 and December 2016 were studied retrospectively in our study. Demographic data of the patients, follow-up periods, pterygium sizes, recurrences, complications (dellen, tenon cyst, graft edema) and periods until recurrence were recorded. Patients who had undergone pterygium surgery previously, patients with active superficial ocular inflammation, infection, glaucoma or corneal pathologies were not included in the study. The study was carried out after obtaining the approval of the ethical committee in accordance with the Helsinki declaration.

Pterygium surgery with autograft was applied as the routine surgical procedure in patients.

Surgical technique

Patients had been operated under local anesthesia. After applying the eyelid speculum, lidocaine HCl 2% was injected underneath the pterygium body, and then pterygium was dissected from the cornea and removed with the help of a crescent blade after having access from under the pterygium with a crochet. Then, the subconjunctival fibrous tissue left in the area covered by the pterygium was removed. Although supero-temporal area is preferred for conjunctival autograft in some cases and infero-temporal area is preferred, in some other cases we preferred the inferior conjunctiva for harvesting the conjunctival autograft. Meticulous care was given to harvesting the graft from the anatomical limbus and absence of tenon tissue in the autograft during the grafting. Care was given to match the limbal area of the autograft with the limbal area of the local recipient bed and it was sutured with 8.0 vicryl. In the postoperative period, topical dexamethasone (for three weeks) and moxifloxacin drops, with preservative-free artificial tears every 2 hours are administered to all the patients within the first week. Patients who attended the control visits at day 1, week 1, week 2 and month 1 and who were followed for at least 6 months were included in the study.

Statistical Analyses

Data had been analyzed with SPSS package program 21 (SPSS Program ver. 21.0). Chi-square test was used for the comparison of categorical data. As the statistical method, descriptive data were expressed as mean ± SD and %. In studying the differences between the mean values of groups, independent t-test was used for parametric data, and Mann Whitney U-test was used for nonparametric data. The p value ≤ 0.05 was accepted as the level of significance within the 95% confidence interval.

RESULTS

The mean age of the overall patients, female patients and male patients were 46.6±15.6 years, 46.1±17.1 years and 47.2±13.6 years, respectively. There was not a statistical significant difference between female patients and male patients regarding to age. (p=0.728). Of the forty-six patients included in the study, 27 were females and 19 were males. The mean follow-up period was 12.06±4.5 months, and recurrence was seen in 13.3% (6/46). The mean pteygium size was 3.9±0.6 mm. In recurrent cases, the mean size of the pterygium was 4.1±0.7 mm. The mean period elapsed until recurrence, if any, was 4.3±1.3 months. Regarding to the recurrence rates in females and males, the rate was 10.5 % in females and 22.2 % males. Recurrence was seen in 4 patients out of 19, who were younger than 40 years of age (%.22.2), and in 2 patients out of 27 who were older than 40 years of age (% 7.4). Regarding to the complications, graft edema was seen in 8.9% (4), dellen formation in 4.4% (2) and tenon cyst was seen in 6.7% (3) cases. Patients who developed graft edema were treated with long-term anti-inflammatory drugs and with lubrication, while patients with Dellen were treated with intense topical lubrication those with persistent Dellen development even after topical treatment were treated with simple surgery within 1 month. Pterygium sizes in patient with Dellen development were 4.3 mm and 5.2 mm, respectively. What was notable in these two cases were their ages: one was 73 years old, the other was 71, and both were insulin dependent diabetic patients. The patients who developed tenon cysts were three females in the age range between 20 and 30 years. Stinging pain continuing at week 2 was seen in 22.2% of patients, and the rate of continuing autograft inflammation was 15.6%. At the same time, when patients were reached through phone calls from the hospital and asked if they would undergo another pterygium surgery on their other eye if needed, all patients have been reached, 86.7% answered that they would.

DISCUSSION

New techniques have always been searched for decreasing the high rates of recurrence in pterygium operations. Different techniques including the bare sclera technique, graft technique with amniotic membrane, and conjunctival autograft with Mitomycin C are being used with this purpose. Pterygium surgery with conjunctival autograft transplantation has been the method of choice in pterygium surgery since it was defined by Kenyon and colleagues in 1985 (9) Recently, techniques including combined subpterygial bevacizumab injection (a novel monoclonal antibody against vascular endothelial growth factor) and pterygial ligation have been developed (10). However, in spite of all these techniques, pterygium excision with conjunctival autograft is still thought to be a safe and effective treatment (11-12). The recurrence rates in pterygium surgery carried out with conjunctival autograft technique are reported between 2% and 39% (13-15). The recurrence rate in our study was 13.3%. It has been suggested that there are many factors affecting

the recurrence. In the study of Tan and colleagues, effects of the pterygium morphology on recurrence in conjunctival autograft procedures with bare sclera excision was examined (12). It was shown in this study that fleshness of the ptergium affected recurrence significantly in cases that bare sclera excision was performed (12). It was shown again in this study that conjunctival autograft was more effective in reducing recurrence as compared to bare excision in primary and recurrent pterygium (12). Furthermore, it has been reported in some studies that recurrence was more frequent in the male gender, persons with darker pigments and in those patients older than 40 years of age (16). It was seen in our study also that the recurrence rate was 7.4% in cases older than 40 years of age, while the same was 22.2% in cases younger than 40 years of age, and recurrence was more frequent in cases younger than 40 years of age. Furthermore, our recurrence rate in females was 10.5% (2) and 22.2% (4) in males, indicating a higher recurrence rate in males. Kocamış et al showed in their study that recurrence was more frequent in cases that pterygium was greater than 3.16 mm (14%) (14)]. We also found in our study that recurrence was more frequently seen in cases with pterygium sizes larger than 3.5 mm; even, the size of pterygium was greater than 3.5mm in 5 patients out of 6 patients with recurrences.

Pterygium surgery with amniotic membrane has been developed as an alternative to the pterygium surgery with conjunctival autograft. It has been considered for the first time in 1940s for use in ocular superficial disease, and then its use in various superficial diseases (17). It has come into the agenda as an alternative treatment particularly in cases with bilateral head pterygium and in cases, that glaucoma surgery is planned for the future (18). We also used inferior conjunctival autografts in our study with the intent of preserving the superior conjunctival tissue. This is particularly important in cases that the conjunctival tissue must be preserved such as glaucoma surgery.

Autografts are sutured on the donor area as the routine surgical procedure. However, different methods are being tried because of the recurrence rates and the discomfort caused by the suturation (19-21). Conjunctival autograft surgeries using fibrin glue have been developed to increase the postoperative comfort and decrease the operation time (22). Onay et al have shown in their study that loose suturation is associated with pyogenic granuloma, inclusion cysts and recurrence. However, the discomfort associated with sutures is reduced with fibrin glue (19). In our study, we investigated the location that the autograft has been harvested from on postoperative discomfort and recurrence, and we found that the rate of stinging pain continuing at week 2 was 22.2% and the rate of autograft inflammation continuing at week 2 was 15.6%. Moreover, with the purpose of whether these subjective complaints really influenced the decision of the patients to undergo another operation, we called the patients to ask if they would undergo another operation if pterygium developed in their other eye; and it was seen that 86.7% (6) patients would wish to undergo another operation. All of the patients who did not wish another operation were those patients with recurrences, and even the patient who had suffered complications stated that they could undergo another operation on their other eye if needed. This showed that the complications were in fact curable with treatment and did not affect the patient satisfaction much. The limitation of our study is related to the small number of patients included in the study despite the long follow-up period.

CONCLUSION

In conclusion, pterygium surgery with conjunctival autograft is a surgical technique that is stilly safely used among all the other techniques with a high rate of patient satisfaction despite a certain level of postoperative discomfort.

Competing interests: The authors found that the conflict of interest did not fully coincide.

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Ethical approval: This study was approved by the Institutional Ethics Committee and conducted in compliance with the ethical principles according to the Declaration of Helsinki.

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